

AMERICAN ANNALS OF THE DEAF

FOUNDED 1847

Official Organ

Conference of Executives of American Schools for the Deaf

FOUNDED 1868

American Instructors of the Deaf

FOUNDED 1850

POWRIE VAUX DOCTOR, Ph.D.

Editor

ELIZABETH E. BENSON, M.A., LL.B.

Associate Editor

*Under the Direction of the Executive Committee
of the Conference*

EDWARD W. TILLINGHAST Arizona, 1969

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HUGO F. SCHUNHOFF California, 1969

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SEPTEMBER, 1966

Volume 111

Number 4

THE CONFERENCE OF EXECUTIVES OF AMERICAN SCHOOLS FOR THE DEAF

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THE CONFERENCE OF EXECUTIVES OF AMERICAN SCHOOLS FOR THE DEAF, originally the Conference of Superintendents and Principals of American Schools for the Deaf, was founded in 1868 and subsequently incorporated under the laws of the State of Maryland in 1958. The Conference is an organization of the executive heads of schools for the deaf in the United States and Canada, and has for its object "to promote the management and operation of schools for the deaf along the broadest and most effective lines and to further and promote the general welfare of the deaf."

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THE AMERICAN INSTRUCTORS OF THE DEAF, founded in 1850 and incorporated by act of Congress in 1897, is an organization of educators of the deaf in the United States and Canada with the great object of "promotion of the education of the deaf on the broadest, most advanced, and practical lines," and for that purpose "to secure the harmonious union in the organization, of all persons actually engaged in educating the deaf in America."

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The American Annals of the Deaf

The AMERICAN ANNALS OF THE DEAF was founded in 1847 at the American School for the Deaf in Hartford, Connecticut, by the members of the faculty of that school, which is the first free public school for the deaf in America. Although the journal received the approval of the administrative school authorities, the periodical was first entirely sponsored by the members of the faculty. After two years the ANNALS was discontinued for some months but was revived by the members of the American Instructors of the Deaf in their first meeting in New York, N. Y., in 1850.

In June, 1861, the publication ceased because of the War Between the States, inasmuch as the membership was made up of northerners and southerners in almost equal proportion. In September, 1868, the AMERICAN ANNALS OF THE DEAF resumed publication with the editorial office on Kendall Green, in Washington, D. C., where it has since remained.

The AMERICAN ANNALS OF THE DEAF is the official organ of the Conference of Executives of American Schools for the Deaf, which was organized in 1868, and of the American Instructors of the Deaf, founded in 1850. According to the Library of Congress it is the oldest educational publication in the United States still in existence. It is also the oldest journal on the education of the deaf in the world.

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AMERICAN ANNALS OF THE DEAF

VOLUME 111

SEPTEMBER, 1966

No. 4

ANNOUNCEMENTS

Official Call for the Convening of an International Conference on Oral Education of the Deaf

An International Conference on Oral Education of the Deaf will be held at The Clarke School for the Deaf, Northampton, Massachusetts, and the Lexington School for the Deaf, New York, New York, June 18-24, 1967, with the endorsement and cooperation of the Alexander Graham Bell Association for the Deaf, Washington, D. C.

George T. Pratt, President, The Clarke School for the Deaf
Co-Chairman, International Conference

Clarence D. O'Connor, Superintendent, The Lexington School for the Deaf, Co-Chairman, International Conference

Bill G. Blevins, Assistant to the President, The Clarke School for the Deaf, Co-ordinator, International Conference

Leo E. Connor, Associate Superintendent, The Lexington School for the Deaf, Co-ordinator, International Conference

For further information write Dr. George T. Pratt

Official Call for the Meeting of the Convention

The forty-third regular meeting of the Convention of American Instructors of the Deaf will be held at the American School for the Deaf, West Hartford, Connecticut, June 25 to June 30, 1967, for the purpose of conducting the necessary business, and the election of officers, and such other business as may properly come before the meeting.

Stanley D. Roth, President
Charles B. Grow, Secretary

Examination of Selected Employment Problems of the Deaf

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The young deaf person encounters a number of obstacles when he leaves school and begins his search for employment. Even after securing an entry job he must overcome a number of problems if he is to perform adequately at this level and then qualify for advancement. His success often depends on prior cooperation between the school and the potential employer in providing realistic preparation for employment.

The employer must make certain adjustments and accept certain risks when he hires a deaf person. If the adjustments or risks appear to be excessive, the deaf person will either not gain employment or, in some instances, will be accepted to perform a very limited function with no opportunity for advancement. Successful employment, therefore, depends on the degree of preparedness on the part of the deaf person as evidenced by communication skills, job hunting techniques, and job entry skills, and on the willingness of the employer to adjust for certain deficiencies in communication and training. The employer must also be willing to accept the risk of making an inadequate selection due to his limited experience with deaf people.

The purpose of this discussion is to examine some of the most apparent problems of gaining employment and qualifying for job advancement in an industrial setting. These considerations developed from the experiences of the personnel office of one large electronic manufacturing company, Tektronix Incorporated.* Some suggestions for improving the preparation of deaf students for employment are offered based on the most common problems noted in this industrial setting. Benefits from cooperative action between the school for the deaf and industry in preparing deaf people for employment are noted.

REVIEW OF THE LITERATURE

The literature pertaining to the employment of the deaf has been developing at a rapid pace in recent years. Reviews by Lerman (3) and

* Tektronix Incorporated, Beaverton, Oregon is an electronics manufacturing firm employing about 4300 people, regularly employing 20 to 25 deaf people and approximately 40 hard of hearing people.

Schein (8) have systematically presented both published and on-going research in this area. Of particular interest are the reports of two national conferences relating to the deaf. The first of these conferences brought together national representatives from education, government, labor and management to develop improved vocational opportunities for the deaf. The official publication from this conference was edited by Ott (5). The second conference, which focused on research in the area of the deaf, examined certain vocational problems imposed by deafness. This report was edited by Stuckless (8). Williams (9) presents a thoughtful review of the problem of vocational guidance for the deaf. The most extensive study of the economic status of the deaf has been presented by Lunde and Bigman (4) although there are a number of more recent studies involving more limited areas of the country (1) (2) (6) (7).

In general, the literature bears upon vocational adjustment, occupational conditions, attitudes toward the deaf and the effects of economic change on the deaf. Although the deaf are frequently regarded as satisfactory workers by employers, there appear to be a number of pressing problems in terms of the less able deaf person and the increasing competition for good jobs. Attention has been focused, therefore, on the problems of unemployment and under-employment among the deaf.

THE GENERAL EMPLOYMENT PROBLEM

The general problems the deaf person faces when he applies for a job are related to the manner in which he presents himself to the potential employer and the general attitudes the employment officer has about deafness. The barrier between the deaf applicant and the employer, therefore, is not just an immediate communication problem. Rather, it combines the immediate communication problem with the employer's long standing attitudes about the deaf and the effects of hearing loss on the deaf person's development of communication skills, social understanding, and technical ability. In both instances, the immediate problem of securing a job has deep roots in the past for both the employer and the deaf applicant.

Continued employment and job advancement depend on the employee's ability to perform his entry job adequately, respond to training, and develop reasonable means of communicating with both the shop boss and his fellow workers. Effective integration into the work force of the industry is established upon the deaf person's awareness of his role as an employee and his willingness to extend the extra effort to achieve it. Better communication between employers and educators of the deaf might assist the deaf person in understanding this role through preparation during the school years.

PROBLEMS IN SECURING AN ENTRY JOB

Even the trained, well-adjusted deaf person will meet some difficulty in his search for employment, but eventually he will probably find suitable placement. Unprepared and inexperienced deaf job seekers can expect to face much greater difficulty though, especially in light of gross misapprehensions the majority of the public have about deafness. Many people, including some prospective employers, variously stereotype the deaf with such labels as "uneducable," "odd", and "retarded," labels that at times

cause even the best qualified deaf job seekers to have trouble finding employment. Many schools for the deaf offer a variety of vocational training, but despite these constructive efforts, many young deaf adults are deficient in basic preparation. In addition to an inability to apply properly for work, many deaf applicants are unqualified for entry positions in trades for which they were supposedly trained. Certainly there is something to be learned from any type of vocational training, but a system of continuous updating of vocational training programs is necessary to insure maximum success in preparing deaf young people for modern jobs.

Unpreparedness becomes apparent to the potential employer in many ways. For example, frequently a deaf applicant will approach the employment receptionist with a hearing relative or friend to serve as adviser or interpreter. He is unaware that by doing this he is, from the outset, putting his self-sufficiency in question. In such cases, the employer will probably wonder, "How dependent would this person be on other employees if he were hired?" The deaf person needs to understand the importance of the "self-sufficiency image" when searching for employment.

Another noteworthy point of unpreparedness is illustrated in the fact that many deaf applicants for employment are unable to complete an application form adequately. The majority of prospective employers are not familiar with the normal problems the deaf have with verbal usage and would, therefore, look upon a deaf person's application as being incomplete and possibly incoherent. The problem, of course, is a result of the deaf individual's general reading difficulty and his unfamiliarity with specific terms used on employment applications. His inability to complete the form properly only enhances the evaluator's impression that the applicant is mentally slow or generally sub-standard.

People with appropriate training and experience will usually be given preference for available jobs. There are frequently jobs available, however, which require only good basic aptitudes, good references, and desirable personal characteristics. As an aid to uncovering specific job potential in applicants, most larger companies administer intelligence, aptitude, and appropriate job knowledge tests. For the deaf this could prove to be a defeating experience. They might have trouble understanding standard test instructions and could be expected to have great difficulty handling reading requirements of some tests.

Frequently in his search for employment, the deaf person will be confronted with an employment interview. It would be quite unusual for a deaf person to find an interviewer who uses the language of signs. However, if the employer has been understanding enough to bring the deaf applicant to the interview stage, he is probably trying to be objective and making an effort to evaluate those attributes in the individual which will be compatible with available jobs. During the employment interview, the interviewer may go to great lengths in his attempts to evaluate the applicant's communication ability. He will probably spend some time facing the applicant directly, speaking naturally, and enunciating clearly to find out how well he reads lips. He will write notes varying in complexity to see how well the applicant understands the written word and how coherently he responds in writing. He may also go so far as to attempt to communicate in improvised pantomime, carefully evaluat-

ing how well the deaf applicant catches on to the improvisation. The interviewer may also note oral communication ability to help determine the deaf applicant's suitability for placement in available jobs.

The problem of securing an entry job, therefore, depends to a great extent on the deaf person's preparedness. Lack of skill in applying for a job, deficiency in entry work skills, inadequate written language, and, to some extent, lack of functional oral language can serve to prevent the deaf applicant from gaining employment.

PREPARATION FOR SEEKING EMPLOYMENT

Each of the specific problems involved in seeking employment can be met to some extent through early, realistic preparation in the schools based on the information gleaned from contact with employers. Job hunting techniques should be taught to those about to be graduated from schools for the deaf and special education programs for the deaf. Such a course might include: how to dress, how to present oneself to a receptionist, how to complete an application, how to write a resume, and how to present it. If the individual lipreads, he should demonstrate this ability as soon as practical. The resume can be used as an excellent introductory device for the deaf applicant. It should include an initial statement, explaining that he is deaf and looking for work, and should be followed by personal data, education and vocational training, work experience, hobbies, and interests. This resume should be outlined in a neat, intelligent and concise manner. Practice in writing resumes, completing application forms, and preparing for an interview would be important aspects of such a course. It would seem that, with this type of training to supplement vocational training, deaf young people would be better prepared to begin hunting for a job.

The deaf may or may not be given some special consideration when they are tested to be sure that they understand what is expected of them. An example of such a consideration would be to give the deaf applicant 3 x 5 cards outlining the test instructions in very simple language. The psychometrist might also demonstrate to the deaf applicant how to perform a particular task and then observe as he follows this example. Also, care may be taken not to start a test until everyone, including the deaf person, understands what he is expected to do. However as such considerations are far from universal, schools need to expose graduating students to personnel, aptitude and job knowledge tests to prepare them to a greater extent to cope with pre-employment testing. The less experience or training an applicant can offer, the more the employer in a large industry will tend to rely on test scores to help determine his hiring decision.

The interview can be a very strenuous experience for the deaf applicant. The bright, well-adjusted person will usually fare quite well, but many more could be taught to meet this situation successfully through preparation in the school. In well planned sessions, graduating students could be made aware of the purpose of the interview and could be coached on appropriate behavior. Realistic role playing situations in the classroom could also provide students with awareness of what they might face in job interviews.

In summary, the deaf person's problems in securing employment are, to a large extent, predictable. Certain specific stumbling blocks such as

the interview, the application form, the misunderstanding of test directions and the dependency on an interpreter often prevent an otherwise adequate deaf applicant from gaining a job. Many of these specific problems can be modified by consultation with potential employers and subsequent alteration of vocational curriculum in the schools. Job preparedness must be viewed within the broad framework suggested by these problems.

PROBLEMS OF THE DEAF IN INDUSTRY

When the deaf applicant is finally placed, he finds new aspects of adjustment with which he must cope. In order to facilitate this adjustment, the supervisor of the group in which the deaf person will work should be consulted to help him and his employees make the deaf person feel comfortable.

An initial problem usually develops in training the deaf employee for his new job. Considering the time it takes to develop a workable system of communication between the job trainer and the deaf employee, a longer training period than would normally be expected for a hearing person will be required. Hopefully, the extra time invested in training will result in a productive, reliable and satisfied deaf employee.

Most deaf employees who have met all of the initial employment requirements are successful. For some, however, the adjustment to close association with hearing people in an industrial setting is too difficult. Certain deaf people have a tendency to be sensitive about the feelings of their associates and at times believe themselves misused. This tendency may become severe enough to create significant problems. To arbitrarily take a day off without asking the employer's permission and eventually to show up on the job as if nothing had happened also creates a serious problem. Unfortunately, such incidents occur among deaf employees too frequently giving the employer the impression that the deaf person does not have an appropriate concept of an employee's responsibility to his employer. It would seem that desirable work habits and the fundamentals of employee-employer relationships could be taught in school.

In conclusion then, the employer, having selected a deaf person for a job, is generally willing to make some adjustments and expend some additional time and effort in training this person. The greatest single problem on the job does not seem to be the inability of the deaf person to acquire the necessary job skills, but rather hinges on his ability to develop an understanding of his role as an employee. Failure to identify this role can lead to erratic work habits, and anti-social behavior, often resulting in termination of employment. Curricular changes in the school should recognize not only the work skills and the problem of job entry but should also deal with the development of responsible employee-employer attitudes. Appropriate preparation developing from understanding between school and industry may assist the young deaf person in understanding the responsibilities of the employee to the employer.

SUMMARY

This discussion focused on some of the problems the deaf person faces in gaining employment and qualifying for job advancement. Some suggestions for improving the preparation of deaf students for employment were indicated and particular attention was drawn to the specific hurdles involved in the mechanics of applying for a job and the general problems of attitudes and role identification necessary to adjust to the industrial setting. The importance of cooperative relationships between school and employer was presented.

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A Professional Challenge*

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In our rapidly changing world professional educators are put to task to prepare the deaf to acquire and hold challenging jobs. At this time it is becoming evident that the deaf are finding it increasingly difficult to secure and to keep positions of employment and to advance in a profession or a vocation. Automation, mass insurance and interviewing policies in business and industry, increased language and mathematics requirements, adult education and on-the-job training geared to those with normal communication abilities are among the important factors discriminating against the deaf adult seeking to earn a meaningful living.¹

We are challenged as professionals to prepare the deaf for tomorrow's world of work. In such a world, a deaf person must be literate rather than functionally illiterate as is the case in so many instances.² Deaf children must learn to read and to write in the complex and idiomatic vernacular of the English language. They need to develop intelligible if not natural speech as well as to meet the maximum of lipreading potential. Linguistic and communication skills are highly desirable in finding employment, advancing on the job, preparing for the economic future, and interacting successfully with both deaf and hearing people. Our normal hearing children of this generation are learning more than we learned as children in our generation. Therefore, it is probably true that the task of educating deaf children is becoming more difficult and challenging than ever before.

The economic problem faced by the deaf is recognized by specialists who are in the full or partial employ of the Federal government. Present Congressional legislation authorizes the U. S. Office of Education to assist in the support of research and demonstration projects, workshops and symposiums, and the training and upgrading of personnel for our profession. The U. S. Office of Education also has funds now to caption filmed material for use with the deaf and to support other similar promising projects. Additional Congressional legislation authorizes the U. S. Office of Vocational Rehabilitation to assist in the support of research projects, demonstrations, and projects providing special facilities and services for the solution of common vocational problems. An example of such a demonstration and research project is "A Personal Adjustment and Prevocational Center for Unemployed Deaf Men" with headquarters at the Michigan Association for Better Hearing offices in East Lansing, Michigan. This project provides rehabilitation services for the unem-

* A paper given at the Macomb-Oakland Workshop for the Teachers of the Deaf and Hard of Hearing, St. Clair Shores, Michigan, February 26, 1965.

¹ Vernon, McCay. "What is the Future for the Deaf in the World of Work." *The Silent Worker*, March, 1962.

² Myklebust, Helmer R. *The Psychology of Deafness*. Grune & Stratton: New York, 1965.

ployed deaf man including medical and psychological diagnoses, classroom instruction, social case work, and living experiences approaching the pattern for a deaf man who gets a job in a city.³

The U. S. Office of Vocational Rehabilitation more recently approved a grant to determine the occupational status of the young deaf adult of New England and the need and demand for a regional vocational center especially for the deaf. The results of the survey showed that a very high percentage of young deaf adults are employed in unskilled or semi-skilled occupations, that the unemployment rate is much higher than that of the general population, that few deaf students have the aptitude and ability for higher academic education, that no satisfactory programs of vocational training are available to the deaf, and that 50 per cent of employed young deaf adults would leave their present jobs to attend a special vocational training center for the deaf if it were available.⁴ It would seem that the results of this study pass alarming judgment on the present day education of deaf children.

The programs for the education of deaf children must adjust with the changes in the economic outlook. The problem of preparing the deaf for the advancing world of work must be met by advancing teachers, advancing methodology, advancing curriculums, and advancing non-school activities. Teachers of the deaf would do well to consider the utilization of a variety of new educational approaches, devices, and materials as well as unused resources developed in the past. A list of instructional media and learning aids and approaches might include new grammatical and orthographic aids, pictures, dioramas, displays, layouts on bulletin boards, models, charts, flannelboards, various conventional book materials, films, cameras, projectors, programmed books and teaching machines, educational television, reading pacers and accelerators, hearing aids, tape recorders and disc playback units, visual speech indicators, automated communication systems, and the new mathematics.

As professional educators we should seek every promising avenue available to us to prepare the deaf for a bright economic future. A desirable goal might be to increase the number of deaf college students from the present 1000 to 5000 in 10 years. Another appropriate goal might be to prepare the majority of the remainder of deaf children now in school to enter advanced vocational training programs. A third needed goal might be to encourage and assist in the development of adult education and on-the-job training programs which offer the deaf adult a fair chance of achievement.

In conclusion, a tremendous challenge exists in our profession to compensate for the increasing difficulty being experienced by our deaf "graduates" and "drop outs" who attempt to enter and hold their own in the world of work. Many factors are operating in our society to discriminate against the deaf in the economic realm. Changes and innovations in the education of the deaf and in the preparation of professional personnel are in spirit with the times. It is hoped that we will find solutions to the economic crisis which the deaf adult is now experiencing.

³ Butler, Stahl. Personal Correspondence, 1963.

⁴ Boatner, Edmund B. "Review of New England's Survey of Young Adult Deaf," *The American Era*. West Hartford, Connecticut, December, 1964.

Administrative Problems in the Education of the Deaf

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During the past century much has been written about the pedagogical problems of educating deaf children. In all the literature, however, there exist few articles concerned with the administrative problems of educating deaf children. In considering the broader field of special education, it becomes evident that here, too, there is a paucity of published information regarding the administrative problems of special education. One exception is the recent study of Wisland and Vaughan,¹ who surveyed administrators and supervisors of special education in 13 western states.

The study of Wisland and Vaughan of the significant problems of administrators of special education programs stimulated the present investigation to determine the administrative problems considered to be significant by administrators of schools for the deaf. The purposes of the present study were (a) to identify and describe the kinds of problems encountered by administrators of schools for the deaf, (b) to determine if there were any relationship between these problems and the factors of type and geographic location of the school for the deaf, and (c) to compare the most significant problems and problem areas of administrators of schools for the deaf with those of the administrators of special education programs, as reported by Wisland and Vaughan.

PROCEDURE

The ten most significant problems as reported by Wisland and Vaughan were used as the basis for constructing a questionnaire composed of 40 problem statements. These ten problem statements were as follows:

- Obtaining adequately prepared personnel
- Adequately providing for the multiple handicapped child
- Helping parents understand their exceptional child
- Adequately providing for all types of exceptional children
- Having adequate time to carry out active research
- Counseling parents
- Developing curriculum for the different types of exceptional children
- Starting new programs for exceptional children not previously included in your program
- Developing new programs and services to expand the program for exceptional children
- Obtaining adequate physical facilities for the instructional phase of the special education program, such as classrooms, therapy rooms, counseling rooms, and examining rooms.

¹ Wisland, M. V. and T. D. Vaughan, "Administrative Problems in Special Education," *Exceptional Children*, Vol. 31, 1964, p. 87.

The eight major problem areas reported in the Wisland and Vaughan study were then used as referents for formulating 30 additional problem statements. These eight major problem areas were:

- Self-directed study and research
- Student personnel
- Communication
- Supervision
- Professional personnel
- Policies and procedures
- Education of the public
- Finance

In order to control evaluation variables, the rating scale used by administrators of schools for the deaf was identical to that used by Wisland and Vaughan in their study. The respondents were asked to rate each problem as one of the following five categories:

1 *Major problem*—one that may require a great deal of time, many decisions, and/or considered to be of major importance to the program.

2 *Moderate problem*—one that may require considerable time, frequent decisions, and/or of considerable importance to the program.

3 *Average problem*—one that may require an average amount of time, decisions, and/or considered to be of average importance to the program.

4 *Minor problem*—one that may require little time, few decisions, and is considered to be of little importance to the program.

5 *No problem*—one that may require none of your time, no decisions, and/or of no importance to the program.

The data reported in the January, 1964, issue of the *American Annals of the Deaf* were used as the basis for selecting the schools for the deaf included in this investigation. A total of 94 questionnaires were sent to the following schools: all public residential schools for the deaf in the United States, the public day schools listed in the *American Annals of the Deaf* as having separate buildings and a minimum enrollment of 90 students, the private residential schools having a minimum enrollment of 90 students, and Canadian schools having a minimum enrollment of 90 students. These 94 schools were divided into the following classes for analysis of results:

Class	% of all replies
I—Public Residential Schools	74
IA—Northeastern Schools	21
IB—Southeastern Schools	20
IC—Central Schools	18
ID—Western Schools	15
II—Public Day Schools	12
III—Private Residential Schools	5
IV—Canadian Schools	9

RESULTS

There were 80 replies to the questionnaire, representing 85% of the sample. The mean rating for all problems by all respondents was 2.64, with a standard deviation of .54. Administrators of schools for the deaf rated self-directed study and research as the most important of the eight problem areas, as did the administrators and supervisors of special education within the study of Wisland and Vaughan, as shown in Table 2.

Comparison of the ten most significant problems of administrators of schools for the deaf with the ten most significant problems of administrators and supervisors of the Wisland and Vaughan study indicates that seven of the significant problems were common to both groups, with the problem of obtaining adequately prepared personnel their most significant problem. Table 3 shows the ten most significant problems of the two groups and the mean rating of each group.

DISCUSSION

Within this study, it would appear that the 40 problem statements included for evaluation were of sufficient significance to evoke more response from administrators of public day schools and public residential schools than from administrators of private residential schools and Canadian schools.

The mean rating of 2.64 given to all problems by all administrators of schools for the deaf places these problems in the category of moderate to average importance. There was little variation in the mean ratings for all 40 problems when consideration is given to the ratings of administrators of the various classes of schools. The administrators of public residential schools rated the 40 problems with the highest significance (2.54), followed by administrators of private residential schools (2.57), administrators of public day schools (2.97), and, finally, administrators of Canadian schools (3.08). When geographical location of the schools for the deaf is considered, there appears to be little difference in the mean rating of all problems by administrators of schools in this study. At the ends of the continuum, administrators of western public residential schools rated all problems as close to moderate significance, while Canadian administrators considered the problems as average in significance.

A comparison of the ratings of the eight problem areas reveals that, in so far as the problem areas are comparable in general scope, the administrators of schools for the deaf found these areas to be of greater significance than did the administrators and supervisors of the Wisland and Vaughan study.

Of the ten problems considered most important by administrators of schools for the deaf, seven were also included among the ten most important problems of administrators and supervisors of the Wisland and Vaughan study. In general, the educators of the deaf tended to rate these seven common problems slightly higher in importance than did the directors of special education programs in the 13 western states. Differences between the two groups would seem to lie in the areas of developing new programs, obtaining physical facilities, and counseling parents, for administrators of schools for the deaf did not consider these problems as significant as those in the areas of psychological counseling for children, supervisory personnel, and utilizing personnel effectively.

An interesting aspect of this study emerged as consideration was given to the problems not rated by the administrators. Seven of the 40 problems were omitted in evaluations by five to eleven administrators. Three of these problems dealt with self-directed study and research, three with student personnel, and one with education of the public. Several explanations might be given for these omissions: the problem statement

was unclear, or controversial, or of little interest or concern to the respondent.

The significance of this study is that it supports the main findings of the Wisland and Vaughan study in regard to the major problems and problem areas encountered by administrators of special education programs in general, or programs for the deaf, in particular. It is hoped that this information can contribute to the development of a rationale and structure for the preparation of administrators of special education programs.

Table 2

Major Problem Areas of Administrators of Schools for the Deaf
and Programs of Special Education

Problem Areas	Grand Means	
	Schools for Deaf	Special Ed. Programs
Self-directed Study and Research	2.34	2.69
Professional Personnel	2.36	2.89
Policies and Procedures	2.39	2.97
Finance	2.60	3.53
Student Personnel	2.63	2.77
Supervision	2.63	2.86
Communications	2.83	2.78
Education of the Public	3.37	3.02

Table 3

Ten Most Significant Problems

Problem Statement	Mean Rating			
	Deaf		Special Education	
		(rank)		(rank)
Obtaining adequately prepared personnel	1.81	(1)	1.67	(1)
Adequately providing for the multiple handicapped child	1.82	(2)	2.07	(2)
Developing curriculum for the different types of exceptional children	1.86	(3)	2.33	(7)
Helping parents understand their exceptional child	1.95	(4)	2.13	(3)
Adequately preparing for all types of exceptional children	2.09	(5)	2.22	(4)
Having adequate time to carry out active research	2.12	(6)	2.24	(5)
Developing new programs and services to expand the program for exceptional children	2.14	(7)	2.39	(9)
Providing psychological counseling for children	2.14	(8)		
Obtaining qualified personnel for supervisory positions	2.16	(9)		

Utilizing the strengths and interests of personnel most effectively	2.21	(10)		
Counseling parents	2.35	(17)	2.28	(6)
Starting programs for exceptional children not previously included in your program	2.35	(15)	2.35	(8)
Obtaining adequate physical facilities for the instructional phase of the special educational program, such as classrooms, therapy rooms, counseling rooms, and examining rooms	2.42	(19)	2.42	(10)

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THE RELATIONSHIP OF ORAL SKILLS TO MANUAL COMMUNICATION IN PROFOUNDLY DEAF ADOLESCENTS*

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SUMMARY

Three standardized tests of speech, lip-reading and intelligence were given to 55 deaf school leavers who were independently rated for speech, lip-reading and manual communication by their teachers. The distribution of ratings showed an overwhelming preference for and fluency in manual rather than oral methods of communication. The interrelationships of tests and ratings were examined in order to discover whether the alleged incompatibility between oral skills and manual communication is observable statistically. No negative correlation was found.

INTRODUCTION

In the strictly oralist school for deaf children, communication by the finger alphabet or by the manual signs used by profoundly deaf adults, is not allowed. It is maintained that the development of skill in manual communication inhibits the growth of the oral skills of speech and lip-reading. A child cannot, according to this view, pay attention to the lips if looking at the hands, will not trouble to name an object if he is allowed to indicate it by sign or by pointing. These excellent rules for the teaching of oral skills are elevated into general principles of education because of the informal approach to the education of the very young: they cannot be confined to speech lessons or lip-reading lessons as under the present methods every lesson is a speech lesson and oral communication must be developed at play, meals and after school in addition to the classroom.

When more formal methods of education are introduced at the junior school stage, this seems to coincide with a pause, or a slight drop, in the development of oral skills and at this stage some would classify children into oral or non-oral and educate by different means of communication as happens in parts of the U. S. A. The firm oralist, however, still maintains as a general principle that manual methods would retard speech and lip-reading and rejects any solution based on partition into oral and non-oral groups.

The present study has undertaken the examination of a profoundly deaf group in order to ascertain the actual relationship between their oral and manual skills, and in particular to see if the alleged oral and non-oral types are observable statistically as a bimodal distribution and if the allegedly generally reciprocal nature of oral and manual methods is observable statistically as a negative correlation between assessments of the skills of each.

* Based on a report of March 1965 to the Department of Education & Science. (Lewis Committee)

POPULATION

Fifty nine Grade III (prelinguistically) deaf children from seven Scottish schools were rated by their teachers and fifty five of these were given standardized tests by a psychologist. (Two boys and two girls left school before the regulation leaving age and were thus rated but not tested.) This group includes all of the profoundly deaf in Scotland born in 1948 namely 22 boys and 18 girls. To this complete year group were added another 9 boys and 10 girls from those born in 1947 and 1949.

Tests were administered over 3 years in the child's last year at school and the age range of those tested was from 15 years 6 months to 16 years 2 months with a mean age of 15 years 10 months. It was decided that children at the end of their school career would make a better sample for investigation than those who have yet to complete their education. It is probable that manual communication is more advanced in school leavers about to enter the manual world of the adult deaf than in younger children so that general application of the findings about the relationship of oral to manual skills in this group to younger groups is not necessarily valid.

All of these fifty nine children are from the deafest section of the community. Grade III deafness precludes the acquisition of natural speech and is thus an educational classification but almost all of Grade III children are speech retarded simply because they cannot hear their own voices, so that this classification coincides very well with an audiometric classification. In this particular sample the hearing loss in the better ear (Sabine and Fowler formula) ranges from 70% to 100% with a mean of 95.6% and a standard deviation of 7.1%. A hearing loss of 100% was registered by 18 children in this sample. Even within the narrow range of hearing loss of Grade III children the influence of residual hearing upon oral skills is remarkable: with children with a less severe hearing loss it would be even more important. Thus the following results are not without general relevance to similar profoundly deaf groups but it would be inadmissible to generalize to less deaf groups just as it is extremely misleading, although unfortunately a common practice, to apply conclusions based on results derived from a population including less deaf children to profoundly deaf groups.

METHOD

RATINGS

Subjective ratings of the pupils' performance were obtained from class teachers via head teachers. Three ratings were used in the investigation, namely:—

Oral Comprehension:

a rating of lip-reading ability under good lighting conditions and with the use of a personal hearing aid.

Voice Production:

a rating of speech intelligibility.

Manual Communication:

a rating of competence at finger-spelling and signing.

The categories of each rating are described verbatim in the "Distribution of Ratings" tables given below. Categories are numbered 1 to 10 from the left for easy identification when reference is made to them in this paper.

TESTS

Progressive Matrices 1938

A twenty minute timed version of this non-verbal paper and pencil intelligence test was completed by the group in order that the effects of the intelligence variable could be taken into account where necessary.

Of more direct relevance to the investigation was the administration of two tests of oral skills each of which are standardized on a population of Grade III deaf children in Scotland including the complete 1941 year group and virtually all the 1948 year group in addition to samples of other year groups.

The Phoneme Count

In this test a literal count is made of phonemes-in-context produced correctly from two confirmatory phonemically comprehensive speech samples. The samples are designed to minimize the influence of vocabulary, literacy and intelligence. The previous validity coefficient of .809 against teachers' assessments of connected speech holds good for the present population.

The Donaldson Lip-Reading Test

This is a face-to-face test of the ability to recognize spoken sentences without benefit of a hearing aid. The examiner uses a multiple choice technique with photographed material designed to minimize as far as possible the influence of vocabulary, literacy and intelligence. A validity coefficient of .76 was obtained against teachers' assessments of oral comprehension in the present study.

RESULTS

(a) *DISTRIBUTION OF RATINGS*

ORAL COMPREHENSION

	No really useful grasp of what people say: recognises a few simple words only.		Can recognise a few common-place words and phrases when spoken deliberately.		The ordinary deaf child in this respect: average understanding of the spoken word.		Above average but falls short of understanding at the normal conversational rate		Can follow a normal conversation reasonably well	
	1	2	3	4	5	6	7	8	9	10
% Boys	0	3	4	14	14	17	7	24	17	0
% Girls	0	4	0	12	8	12	15	15	34	0
% Total	0	4	2	13	11	14	11	20	25	0

VOICE PRODUCTION

	Can not produce recognisable words		Very laboured speech which may be understood by those who have taught it.		Can produce speech which is understood by those familiar with it at home and school		Speech may be occasionally intelligible to others besides family and teachers.		Can produce fairly fluent speech, intelligible to the man-in-the-street.	
	1	2	3	4	5	6	7	8	9	10
% Boys	7	0	10	14	10	14	24	17	4	0
% Girls	0	4	4	27	7	15	19	12	12	0
% Total	4	2	7	20	9	15	22	14	7	0

MANUAL COMMUNICATION

	Has no knowledge of finger-spelling.		Has some knowledge of finger alphabet but rarely uses it.		Average competence at understanding finger-spelling.		Can communicate fluently with the adult deaf by using finger alphabet		Almost total reliance on fingers for means of communication.	
	1	2	3	4	5	6	7	8	9	10
% Boys	0	0	4	7	10	4	31	41	3	0
% Girls	0	4	8	0	4	12	38	30	4	0
% Total	0	2	5	4	7	7	35	36	4	0

TOTAL 1948 year group (including premature leavers)22 boys, 18 girls

Category	1	2	3	4	5	6	7	8	9	10
% Oral Comprehension	0	5	2	15	15	13	13	17	20	0
% Voice Production	2	0	5	25	13	22	13	13	7	0
% Manual Communication	0	2	8	8	10	10	32	25	5	0

Sub Group with 100% hearing loss11 boys, 7 girls

Category	1	2	3	4	5	6	7	8	9	10
% Oral Comprehension	0	0	6	22	22	11	11	17	11	0
% Voice Production	11	0	6	38	6	17	16	6	0	0
% Manual Communication	0	6	0	11	17	11	22	22	11	0

As the distributions of the teachers' ratings were not normal a re-grouping of categories was necessary before calculating product moment correlation coefficients. Categories 5 and 6 of Oral Comprehension and Voice Production were thus treated as a single category and in the Manual Communication rating categories 4, 5, 6 and 7 were treated as a single category to offset the heavily skewed distribution.

(b) *INTERCORRELATIONS*

CORRELATION MATRIX

	1	2	3	4	5	6
Donaldson Lip-Reading Test 1	1.00	.73	.76	.81	.32	.50
Phoneme Count Speech Test 2		1.00	.57	.81	.23	.36
Oral Comprehension 3			1.00	.67	.17	.22
Voice Production 4				1.00	.09	.28
Manual Communication 5					1.00	.31
Progressive Matrices 6						1.00

DISCUSSION OF RESULTS

(a) *DISTRIBUTION DATA*

The distribution of ratings shows that, despite the current hegemony of oralism in teaching methods, no less than 71% of school leavers can communicate fluently by using the finger alphabet as against 25% who can follow a normal conversation reasonably well by lip-reading and the mere 7% who can produce fairly fluent intelligible speech. It is perhaps worthy of note that the mean % hearing loss of the children constituting this 7% is 82.7% in the better ear: their mean residual hearing is better than the group mean by almost two standard deviations.

The popularity of manual communication is probably accountable in terms of its relative ease of acquisition but the distribution data revealed in this study shows another feature, namely that the deaf child who wishes to communicate with school-mates (almost all of whom are segregated in schools attended solely by profoundly deaf children) by lip-reading and speaking must belong to the 7% minority in order to do so but has even less than this percentage from which to choose a partner with whom to converse. It is true that such a child could more easily converse with hearing people and with teachers but it is not surprising that they all acquire some proficiency in the manual methods favored by 71% of their own school-fellows.

Some sex differences are apparent in the distributions of ratings. The noticeable lead which girls have over boys in lip-reading assessed by the Oral Comprehension rating and their relatively lower rating within categories 7 and 8 of the manual communication rating perhaps may be due to their more educational conformist attitude when compared with boys.

A difference in the same direction between the mean Phoneme Count scores between boys and girls was recorded but proved to be of no statistical significance:—

	Mean Phoneme Count Score	Standard Deviation
Boys	82.39	22.75
Girls	85.38	22.12

The table showing the distribution of ratings in the sub-group with 100% hearing loss indicates the striking importance of residual hearing for the acquisition of oral skills.

(b) *INTERCORRELATIONS*

The correlation matrix shows greater communality for the Donaldson Lip-Reading Test than for all other variables. This is in part due to the distribution of test scores which is rectangular tending to bimodal: with standard scores a drop in the value of the correlation coefficients could be expected. A bimodal pattern in some of the factors constituting this test may arise from the effects of streaming within schools or possibly it is due to the fact that lip-reading is more of an all-or-nothing skill than most classroom subjects. Be this as it may the cleavage between the competent and incompetent lip-readers is not so discontinuous as to lead to the conclusion that oral and non-oral pupils are irrevocably placed in distinct populations but if it were decided to segregate into oral and non-oral courses on other grounds this kind of distribution should make classification by standardized test quite efficient.

The variable with the lowest communality is manual communication and much of this is due to the crude classification adopted to make the heavily skewed distribution suitable for computing correlation coefficients.

The most obvious features of the correlation matrix relevant to the present study are:—

(1) there are no negative correlations between any of the measures of oral skills and the manual communication rating: indeed there are no negative correlations at all.

(2) positive significant correlation coefficients are recorded between the manual communication rating and the Donaldson Lip-Reading Test.

If there were a genuine negative transfer of training between manual communication skills and oral skills so that proficiency in finger language inhibited the development of speech and lipreading then, on the face of it, this would tend to produce a negative correlation when the two kinds of skills are compared. The results clearly show that no such negative correlation exists and that in most cases pupils have approximately equal chance to be good at either or neither and slightly more chance of being good at both. Thus there appears to be no statistical support for the currently popular opinion that manual communication is detrimental to or incompatible with the development of

speech and lip-reading. But the jump from the evidence of correlational tables to this kind of practical conclusion cannot be taken so easily. There are several important factors influencing the relationship of oral and manual communication skills in both the positive and negative direction which must be taken into account: they are discussed below.

GENERAL DISCUSSION

It is a matter of common knowledge that the vast majority of mental skills and abilities are positively correlated, indeed the concept of a negative ability is rather difficult to imagine. The "compensation" theory has long been discredited and while, for example, the belief that the less academic pupil is somehow "good with his hands" persists at the anecdotal level, it is quite erroneous as a description of tendencies in the general population as measured by standardized tests, which clearly show a positive correlation between these two abilities. In certain kinds of factorial analysis techniques—for example principle components analysis—when the general factor is taken out a number of bipolar factors usually emerge. It is common for example to find verbal ability and spatial ability bipolarized in this way. Whether or not this represents a real incompatibility of these skills in individuals is another matter and in any case rotation of factors may result in alternative factor groupings which are equally valid. The results of the present study do not rule out the possibility of an oral/manual bipolar factor existing independently of the general factor which has not been taken out.

The influence of a general factor of educational ability or intelligence could be expected to influence the correlation between oral and manual skills in the positive direction simply because clever pupils would be more likely to be good at both and dull pupils to be poor at both.

So far as the Progressive Matrices test may be taken to represent general intelligence, the influence of intelligence on the relationship of oral to manual skills is observable in this study. It is evident from the correlation matrix that significant correlations exist between the Progressive Matrices variable and all others save that of Oral Comprehension. Again, it is noteworthy that the sole significant correlate of Manual Communication among the measures of oral skills, namely the Donaldson Lip-reading Test, has also the highest correlation coefficient with the Progressive Matrices variable. By the calculation of a partial correlation coefficient which removes the influence of the intelligence variable it is possible to arrive at a more meaningful value for the correlation between the Donaldson Lip-Reading scores and the rating of Manual Communication: whereas the unpartialled coefficient stands at a significant .32, the partial correlation coefficient, allowing for the inter-correlations with the Progressive Matrices Test, stands at .23 which is not significant at the .05 level.

While it is illuminating to partial out the influence of general ability for experimental purposes it is as well to remember that it is rarely, if ever, artificially discounted in the classroom. It is not, in other words, an operationally irrelevant influence like the "halo effect" in ratings which is considered next.

The halo effect occurs when raters, using one form on one occasion, generalize from one rating to the others thereby influencing the correlation between ratings in the positive direction. It is equally possible that teachers' preconceptions of the either/or relationship of manual and oral communication skills could influence the correlations between ratings of each in the negative direction. Perhaps a combination of these two effects could result in the stalemate of a zero correlation. But the use of standardized tests, which correlate highly with the Voice Production and Oral Comprehension ratings, avoids any of these inter-rating effects and makes possible a comparison free from such irrelevant influences. The results show that the standardized tests are slightly more positively related to manual communication than are the Voice Production and Oral Comprehension ratings so that a halo effect operating in favor of a positive correlation seems unlikely.

On the other hand the "time available" effect would tend to influence the relationship of oral and manual skills in the negative direction in that time spent in school on communication skills is limited and thus time spent on one medium of communication is not available for instruction in the other. Between most school subjects positive transfer of training offsets the time available effect and results in positive correlations between subjects.

It would be surprising if positive transfer of training did not exist between two skills commonly linked by linguistic ability such as finger spelling and any of the oral skills: a positive correlation is to be expected on the basis of much similarity of content. In fact in the present study only two pupils were described as being almost totally dependent upon the fingers for communication and of the 71% rated as fluent manual communicators only 5 children were rated below average for Oral Comprehension and 12 below average for Voice Production. No regular or obvious relationship was found between oral skills and manual communication but good oral pupils were often rated as fluent finger spellers. At this point it may be noted that only category 9 in the manual communication rating includes signing and that the rating otherwise refers to finger spelling. Few conclusions therefore may be drawn from these results about signing except in so far as it can be assumed that "pure" finger spelling devoid of signs is extremely rare.

In general, the dominant influence producing negative correlations between oral and manual skills is hearing loss. This is evident on a priori grounds as the following arrangement makes clear:—

	Manual Fluency	Fluency in Lip Reading	Speech Fluency
Hearing	Virtually none	Few	The majority
Partially Deaf	Very few	The majority	Many
Profoundly Deaf	The majority	Some	Few

A substantial hearing loss is, of course, directly conducive to poor speech and to a tendency to rely on manual communication, so that, in the loosely defined "deaf" group, including people with useful residual hearing, those who use manual methods of communication will tend to be the poorer speakers. This negative relationship is not, as common sense may suggest, due mainly to interaction effects of manual upon oral skills or to time available or any incompatibility effects but mainly to the presence of the irrelevant common factor of extent of hearing loss. To put this in its simplest terms it might be said that those with the greater hearing loss tend to be poorer oral pupils and to resort more often to manual communication: it does not logically follow that the practice of manual communication causes oral backwardness.

In the present study where the influence of hearing loss has been substantially diminished a negative relationship between oral and manual skills is nowhere apparent.

CONCLUSIONS

Within the hearing loss and age limits of this sample and making such allowances as the relatively simple experimental design of this investigation permits, it may be concluded that:—

- (1) The lack of a dominant negative relationship between oral and manual communication abilities taken together with the distribution which shows the overwhelming popularity and relative fluency of manual methods, despite discouragement, suggests that the celebrated oralist v. manualist controversy can not be regarded as finally settled in favor of the former.
- (2) The interrelationships presented above may also indicate that the assumption of the antithetical nature of oral and manual teaching is not justified in fact and hence that the controversy is largely one of educational theory rather than practice.

In the last resort the issue will be resolved by the professional judgement and experience of Teachers of the Deaf which, however, should include, *inter alia*, some appreciation of studies based upon the statistical evaluation of facts and the objective assessment of results.

The Hiskey-Nebraska Test of Learning Aptitude (Revised) Compared To Several Achievement Tests

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The ability to forecast school achievement in deaf children would be of acknowledged value. To date researchers have had little success in finding a way to make valid predictions. Previous research studies on the original Hiskey-Nebraska Test of Learning Aptitude were usually a comparative type in that the Hiskey-Nebraska Test of Learning Aptitude was compared to other intelligence instruments. Research has not shown the relationship between learning age as determined by the Hiskey Scale and academic gains as measured by an achievement scale as a basis of prediction. Any information regarding the possible prediction of school achievement would be beneficial to the entire deaf educational profession.

The purpose of this research was to explore the relationship between the learning age obtained in the revised Hiskey-Nebraska Test of Learning Aptitude and several achievement scales to determine whether the Hiskey-Nebraska Test of Learning Aptitude (Revised) could be used as a predictor of academic achievement for deaf children.

Subjects for the research were 235 deaf students in residence at the Iowa School for the Deaf ranging in age from 7-17. All of the students were given the Hiskey-Nebraska Test of Learning Aptitude (Revised) as well as The Stanford Achievement Test, The Gates Reading Test, The Metropolitan Achievement Test and a Teacher Rating Scale developed by the researcher. All of the psychological tests were given by a school psychologist and the researcher.

The Pearson r was the statistical instrument used to measure the correlations between the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the achievement ratings. Computers at the University of Nebraska were used for the actual computation.

The Fischer Table was used to determine the level of confidence.

The students were broken up in seven separate groups—by age and class. Appropriate forms of the achievement test were given to each group level.

RESULTS

GROUP I. (20 students. Age range 7-1 to 8-6)

A significant relationship was found at the .05 level for all the subtests on the Gates, The Metropolitan and Teacher Rating Scale.

GROUP II. (43 students. Age range 8-1 to 10-7)

The subjects had been in school three to four years. There was a significant relationship at the .05 level with all the achievement test subscores, on the Gates, Metropolitan and The Teacher Rating Scale

GROUP III. (26 students. Age range 10-1 to 12-0. Fifth year students)

Correlations at this level were not significant at the .05 or .10 level. Correlations ranged from .052 (Arithmetic Computation) to .215 (Arithmetic Reasoning) on the Stanford. Correlations on the Gates and Metropolitan were very low. There were even some minus correlations. Correlations of the Teacher Rating Scale were not significant.

GROUP IV. (26 students. Sixth and Seventh year classes)

All of the subtests were significant at the .05 level on the Stanford. With the exception of Word Knowledge and Word Discrimination all of the subtests on the Metropolitan were significant. All of the subtests on the Gates were significant at the .05 level. The subtests on the Teacher Rating Scale were significant for attention span, recall and common sense.

GROUP V. (32 students. Eighth year level)

With the exception of Arithmetic Computation all of subtest scores on the Stanford lacked significance at the .05 level. On the Metropolitan, Word Knowledge, Word Discrimination, Reading and Language were not significant. Arithmetic Computation and Reasoning were significant. All of the Gates subtests and The Teacher Rating Subtests were not significant.

GROUP VI. (36 students. Age range 14-0 to 16-9. Freshman and Sophomore classes.

On the Stanford correlations for Paragraph Meaning, Word Meaning, Spelling, Social Studies and Science were not significant at the .05 level. Language, Arithmetic Computation and Problem Solving, Study Skills were significant at the .05 level.

The Metropolitan subtest scores indicated that correlations for Word Knowledge, Spelling, Social Studies Information, Social Studies Skills and Science were not significant. Correlations for Reading, Language, Language Study Skills, Arithmetic Computation and Arithmetic Problem Solving, were significant.

The correlations for each of the subtests on the Gates Reading Test were significant at the .10 level.

The correlations on The Teacher Rating Scale were not significant at the .05 level.

GROUP VII. (25 junior and senior high school students ranging in ages from 15-0 to 17-2)

All of the achievement tests and The Teacher Rating Scale were significant at the .05 level.

DISCUSSION

Arithmetic Computation and Arithmetic Reasoning showed the highest as well as the most consistent correlations throughout the entire sample. Low correlations were found mostly in subject matter requiring reading skill such as English, Literature, Composition, Science, Social Studies, etc.

A "gray area" stood out distinctly at the fifth, sixth, seventh and ninth year levels. Practically all of the correlations at these levels were not significant. Significant and high correlations were found in low elementary years and in the advanced high school years. Scores obtained on The Teacher Rating Scale were consistent with correlations obtained on subtest scores on the achievement scales.

There was very little difference between the Stanford and Metropolitan correlations.

The entire study presented an interesting picture. The correlations tended to be significant at the lower and higher ends of the scale. This may make it possible to predict achievement at these levels through the use of this Hiskey-Nebraska Test of Learning Aptitude (Revised). In the middle years the opposite appears to be true. The cause of failure at this level has not been determined. Several possibilities come to the foreground for consideration which should perhaps be studied in depth,

1. The learning age seems to show consistent growth throughout the child's school career.
2. It may be that the achievement tests are not adequate for the upper elementary years and that a new instrument is needed.
3. This is a time of adjustment for these children. They change dormitories, change school buildings, curriculum changes and the period of Adolescence begins. It may that be this might affect the learning process.
4. It also may be that the child reaches a point where he must catch up at this level and it takes longer to grasp material.
5. Finally, the material changes from a concrete to an abstract nature. This causes a great deal of difficulty.

From the results of this study it can be concluded that it may be possible to predict academic achievement by the use of the learning age scale of the Hiskey-Nebraska Test of Learning Aptitude (Revised) at the elementary and high school levels. The results suggest areas for further study. Additional research might be conducted using another intelligence test to check correlations with the same achievement tests used in this study.

The upper elementary level should be segregated for more thorough study, considering the type of subjects the students study in relationship to the breakdown in these grades. There is a possibility that such a study would necessitate the development of special measuring techniques. Noting the personal and social problems of this group, perhaps the non-school hours should be observed more closely to discern the relationship of non-school activities to the problem.

The results of this research should be an incentive for future study so that some of the learning problems which are now affecting the education of the deaf may be investigated and eventually alleviated. Many problems have been faced in an attempt to give the deaf the best possible tools for living. The hearing handicapped not only have medical and electronic help, but also have psychological help which strives to enlighten even further problems confronting the hearing impaired segment of our society. More and more the hearing handicapped

are being thought of as individuals with uniquenesses all their own that need careful study as further strides forward are to be taken to enhance their place in the world.

TABLE 1

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Metropolitan Achievement Test (Primary)

GRADE 2

	r
Word Knowledge	.654
Reading	.566
Arithmetic	.681

TABLE 2

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Gates Reading Test

GRADE 2

	r
Word Meaning	.603
Sentence Meaning	.643
Paragraph Meaning	.470

TABLE 3

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and a Teacher Rating Scale

GRADE 2

	r
Communication	.521
Abstract Reasoning	.447
Attention Span	.516
Recall	.559
Common Sense	.375

TABLE 4

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Metropolitan Achievement Test, Primary

(GRADES 3 & 4)

	r
Word Knowledge	.389
Reading	.553
Arithmetic	.633

TABLE 5

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Gates Reading Test

(GRADES 3 & 4)

	r
Word Meaning	.421
Sentence Meaning	.434
Paragraph Meaning	.470

TABLE 6

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Teacher Rating Scale

(GRADES 3 & 4)

	r
Communication	.559
Abstract Reasoning	.581
Attention	.604
Recall	.586
Common Sense	.487

TABLE 7

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Stanford Achievement Test

GRADE 5

	r
Paragraph Meaning	.146
Word Meaning	.125
Language	.210
Arithmetic Reasoning	.215
Arithmetic Computation	.052

TABLE 8

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Metropolitan Reading Test

GRADE 5

	r
Word Knowledge	— .125
Reading	.059
Arithmetic	.084

TABLE 9

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Gates Reading Test

GRADE 5

	r
Speed	— .055
Vocabulary	— .135
Comprehension	— .032

TABLE 10

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Teacher Rating Scale

GRADE 5

	r
Communication	— .262
Abstract Reasoning	— .028
Attention Span	.110
Recall	.039
Common Sense	.149

TABLE 11

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Stanford Achievement Test

(GRADES 6 & 7)

	r
Paragraph Meaning	.510
Word Meaning	.468
Language	.396
Arithmetic Reasoning	.510
Arithmetic Computation	.440

TABLE 12

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Metropolitan Achievement Test

(GRADES 6 & 7)

	r
Word Knowledge	.359
Word Discrimination	.334
Reading	.388
Language	.426
Arithmetic Computation	.547
Arithmetic Reasoning	.547

TABLE 13

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Gates Reading Test

(GRADES 6 & 7)

	r
Speed	.485
Vocabulary	.521
Comprehension	.388

TABLE 14

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Teacher Rating Scale

(GRADES 6 & 7)

	r
Communication	.251
Abstract Reasoning	.346
Attention Span	.539
Recall	.436
Common Sense	.473

TABLE 15

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Stanford Achievement Test

GRADE 8

	r
Paragraph Meaning	.085
Word Meaning	.044
Spelling	.224
Language	.318
Arithmetic Reasoning	.324
Arithmetic Computation	.417
Social Studies	.049
Science	.222
Study Skills	.067

TABLE 16

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Metropolitan Achievement Test

GRADE 8

	r
Word Knowledge	.088
Word Discrimination	.145
Reading	.018
Language	.267
Arithmetic Computation	.416
Arithmetic Problem Solving	.447

TABLE 17

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Gates Reading Test

GRADE 8

	r
Speed	.217
Vocabulary	.294
Comprehension	.201

TABLE 18

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Teacher Rating Scale

GRADE 8

	r
Communication	.230
Abstract Reasoning	.254
Attention Span	.236
Recall	.289
Common Sense	.247

TABLE 19

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Stanford Achievement Sub-scores.

GRADES 9 & 10

	r
Paragraph Meaning	.175
Word Meaning	.211
Spelling	.119
Language	.319
Arithmetic Computation	.442
Arithmetic Problem Solving	.443
Social Studies	.246
Science	.229
Study Skills	.428

TABLE 20

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Metropolitan Achievement Test

GRADES 9 & 10

	r
Word Knowledge	.275
Reading	.324
Spelling	.127
Language	.375
Language Study Skills	.452
Arithmetic Computation	.442
Arithmetic Problem Solving	.443
Social Studies Information	.199
Social Study Skills	.276
Science	.091

TABLE 21

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Gates Reading Test

GRADES 9 & 10

	r
Speed	.323
Vocabulary	.307
Comprehension	.303

TABLE 22

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Teacher Rating Scale

GRADES 9 & 10

	r
Communication	.109
Abstract Reasoning	.269
Attention Span	.134
Recall	.82
Common Sense	.111

TABLE 23

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Stanford Achievement Sub-test scores

GRADES 11 & 12

	r
Paragraph Meaning	.679
Word Meaning	.616
Spelling	.579
Language	.671
Arithmetic Reasoning	.722
Arithmetic Computation	.653
Social Studies	.674
Science	.643
Study Skills	.519

TABLE 24

Correlation Coefficients Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Metropolitan Achievement Test

GRADES 11 & 12

	r
Word Meaning	.726
Reading	.603
Spelling	.765
Language	.661
Language Study Skills	.658
Arithmetic Computation	.747
Arithmetic Problem Solving	.682
Social Studies Information	.625
Social Studies Study Skills	.629
Science	.657

TABLE 25

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Gates Reading Test

GRADES 11 & 12

	r
Speed	.650
Vocabulary	.542
Comprehension	.598

TABLE 26

Correlations Between the Learning Age of the Hiskey-Nebraska Test of Learning Aptitude (Revised) and the Teacher Rating Scale

GRADES 11 & 12

	r
Communication	.561
Abstract Reasoning	.553
Attention Span	.695
Recall	.438
Common Sense	.686
Mean	.635

FIGURE 1

RELATIONSHIP BETWEEN MEAN ACADEMIC ACHIEVEMENT
AND GRADE PLACEMENT

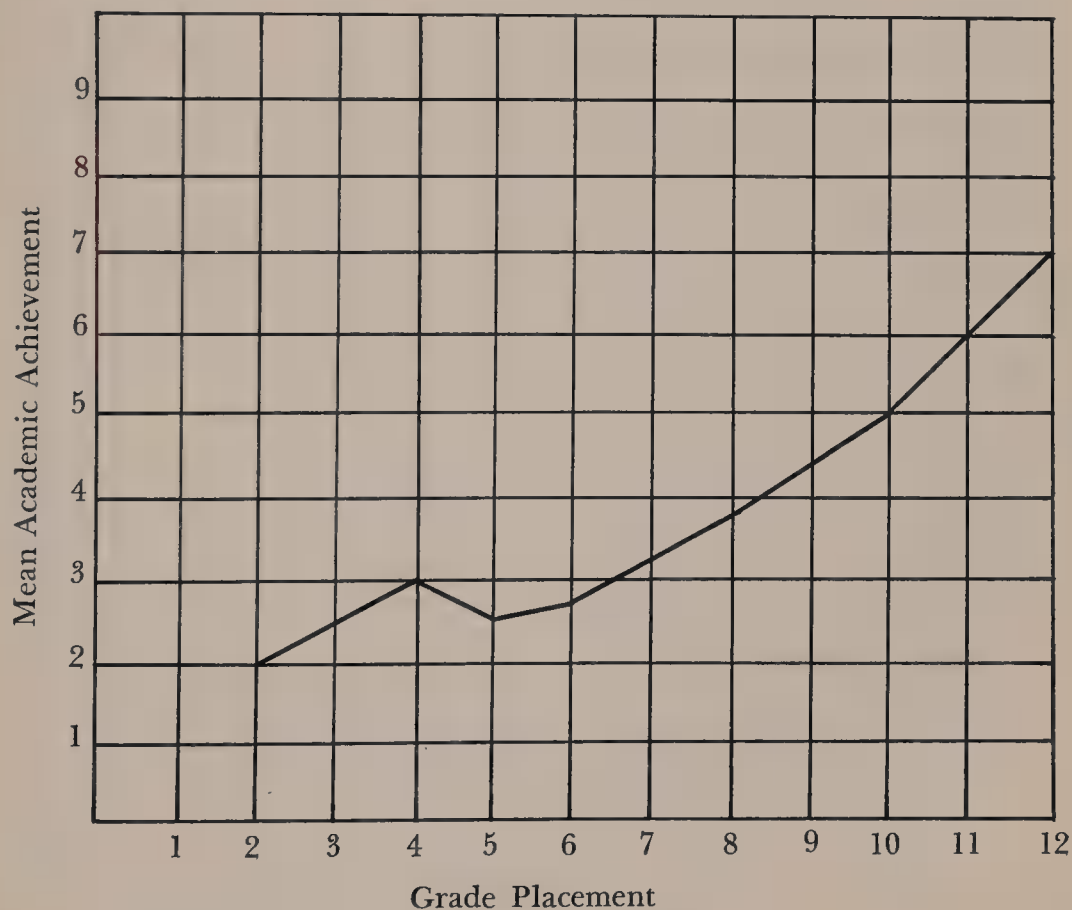


FIGURE 2

RELATIONSHIP BETWEEN MEAN LEARNING AGE LEVEL
AND GRADE PLACEMENT

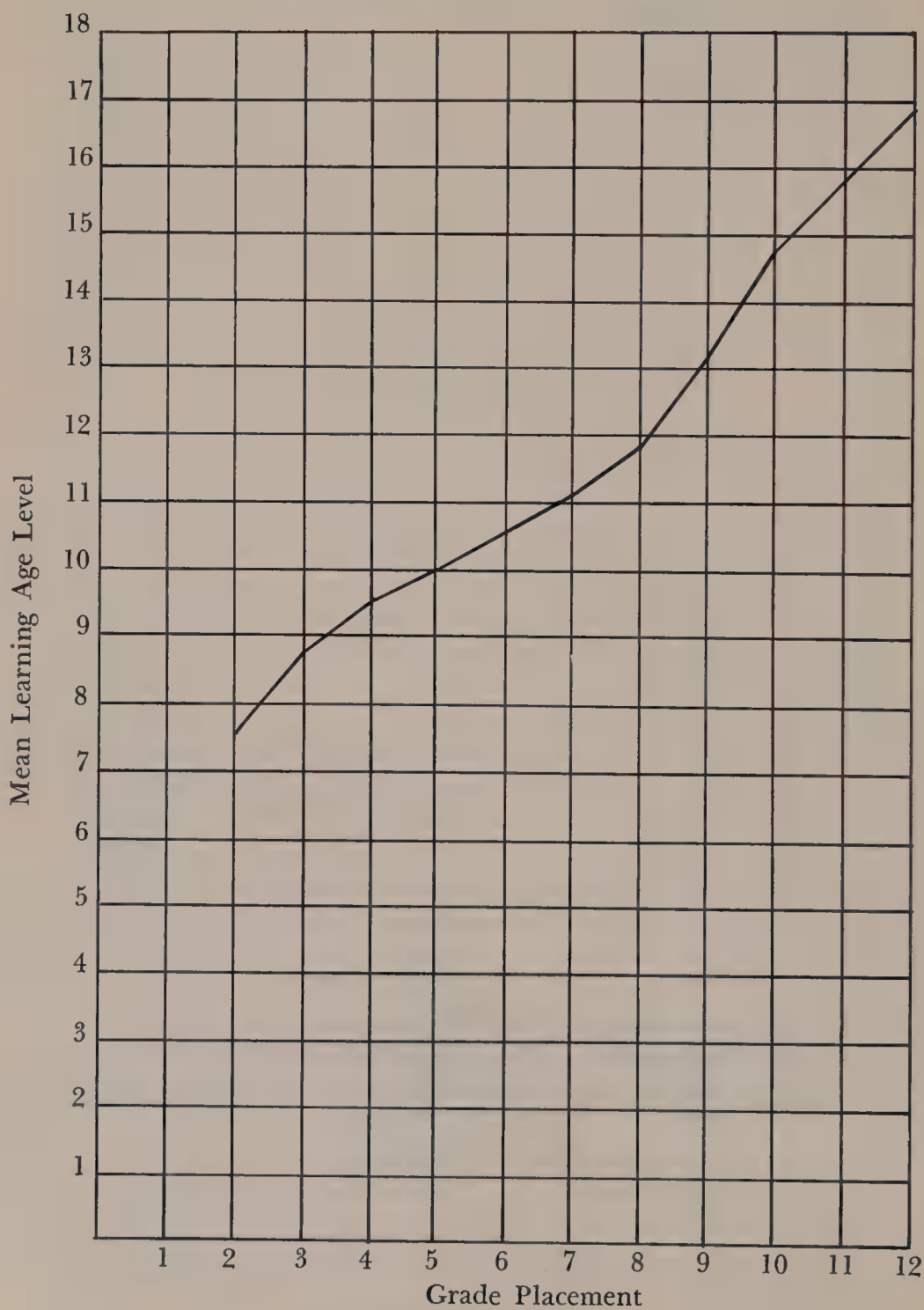
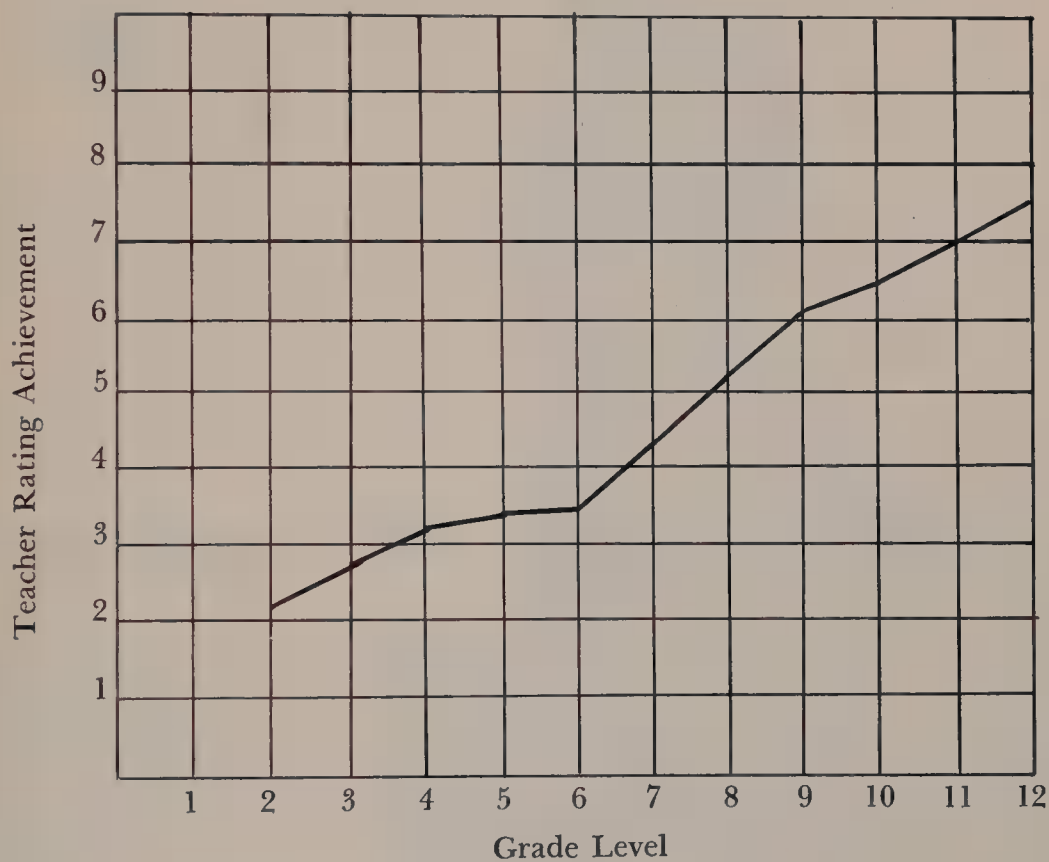


FIGURE 3

RELATIONSHIP BETWEEN MEAN TEACHER RATING
ACHIEVEMENT AND GRADE LEVEL



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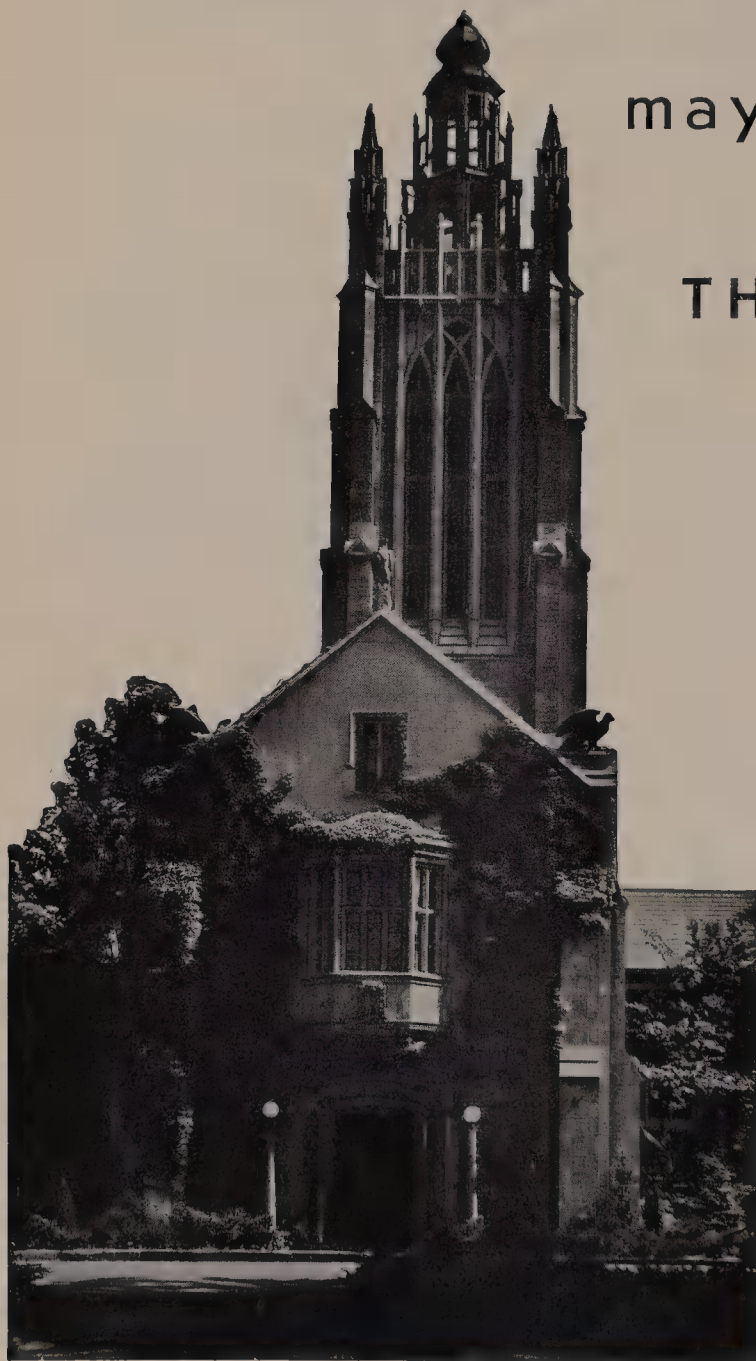
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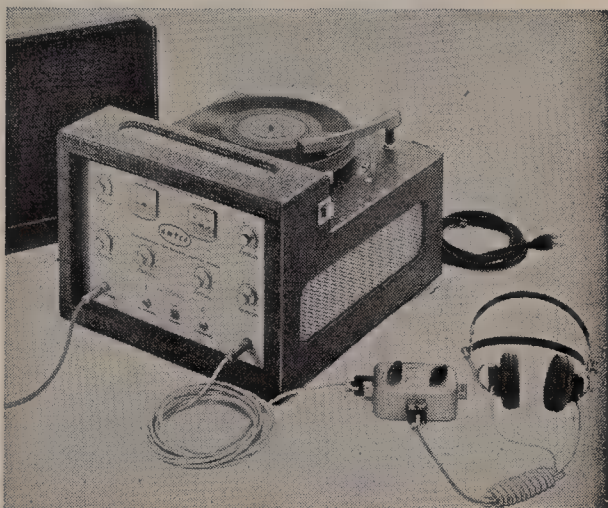
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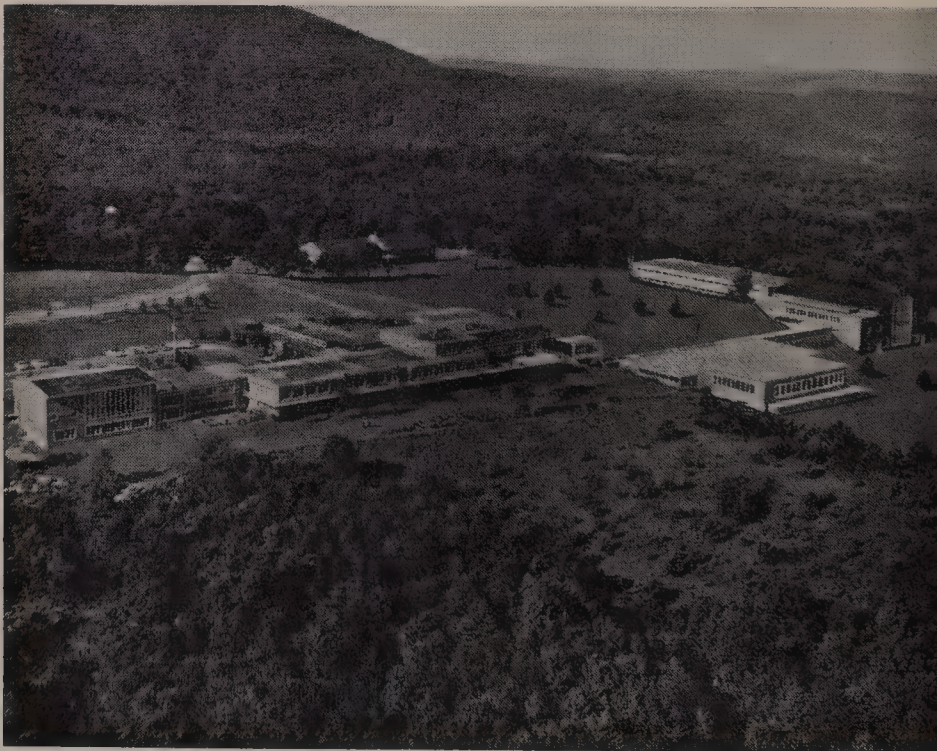
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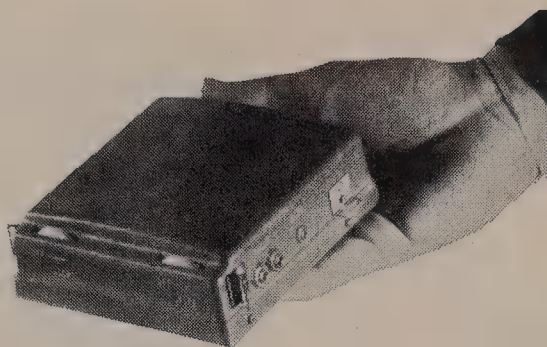
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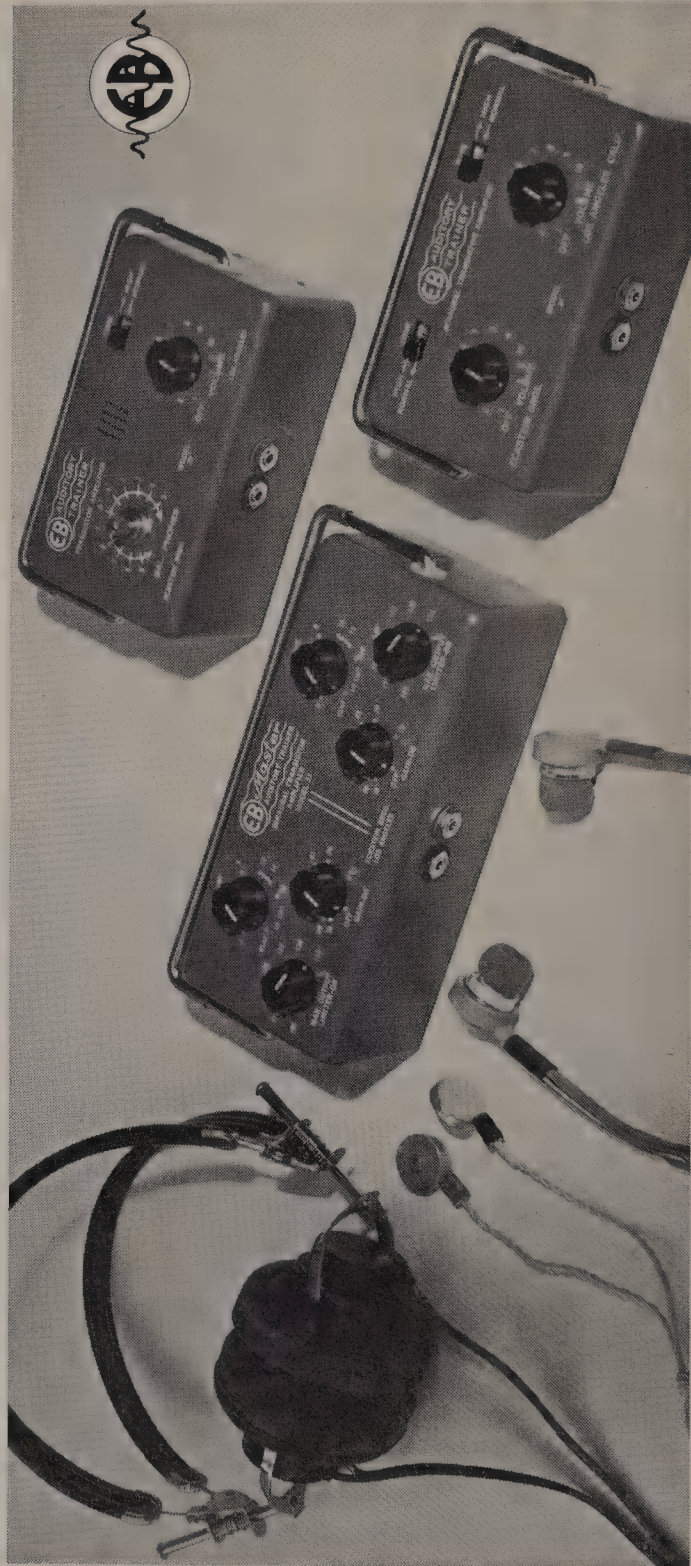
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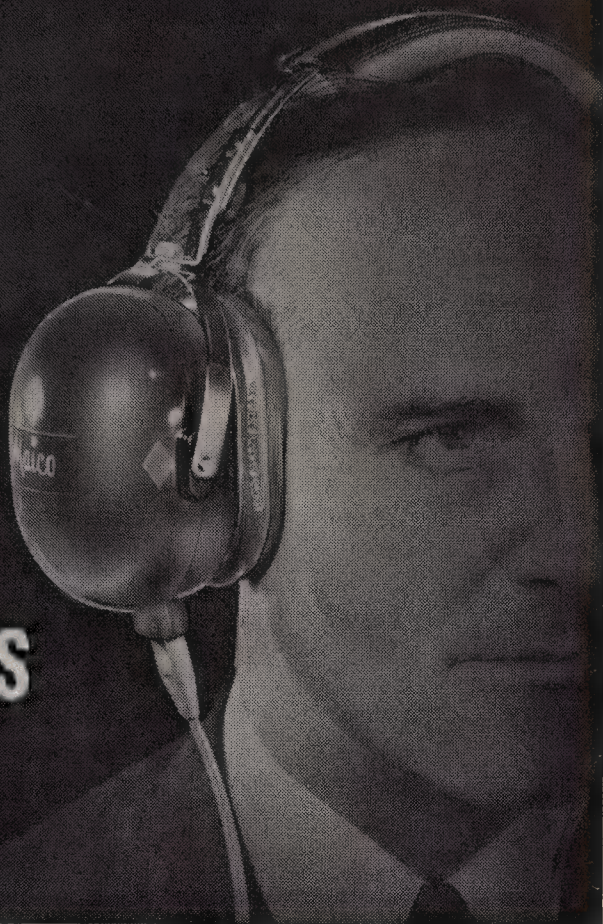
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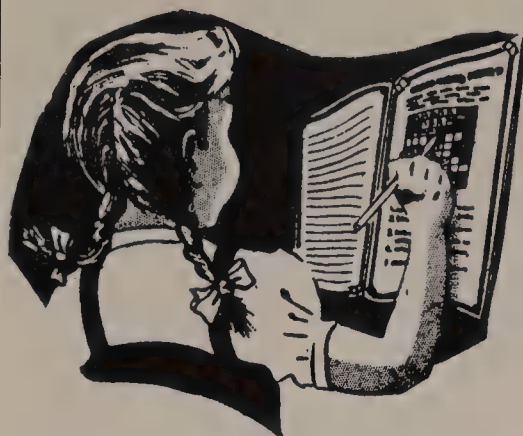
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